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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/820,692	03/30/2001	Ting Chien	015290-506	5245

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EXAMINER
CHEN, KIN CHAN

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 09/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action	Application No.	Applicant(s)	
	09/820,692	CHIEN ET AL.	
	Examiner	Art Unit	
	Kin-Chan Chen	1765	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 20 September 2002 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) ☐ The period for reply expires _____months from the mailing date of the final rejection.

b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2. ☐ The proposed amendment(s) will not be entered because:

   (a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);

   (b) ☐ they raise the issue of new matter (see Note below);

   (c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

   (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____.

3. ☒ Applicant's reply has overcome the following rejection(s): *claim23 under 35 USC 112, first paragraph.*.

4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5. ☒ The a)☐ affidavit, b)☐ exhibit, or c)☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because: *see attached sheet*.

6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7. ☐ For purposes of Appeal, the proposed amendment(s) a)☐ will not be entered or b)☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

   The status of the claim(s) is (or will be) as follows:

   Claim(s) allowed: _____.

   Claim(s) objected to: _____.

   Claim(s) rejected: _____.

   Claim(s) withdrawn from consideration: _____.

8. ☐ The proposed drawing correction filed on _____ is a)☐ approved or b)☐ disapproved by the Examiner.

9. ☐ Note the attached Information Disclosure Statement(s)(PTO-1449) Paper No(s). _____.

10. ☐ Other: _____

Response to After Final Reconsideration

1. In light of applicant's response and the interpretation from the specification, the new subject matter rejection of claim 23 under 35 U.S.C. 112, first paragraph, has been withdrawn.

2. As stated in the office action, "the etchant gas **consists essentially of** a hydrogen-free fluorocarbon gas, an oxygen- containing gas and optional carrier gas" in claim 24 , and "the etchant gas **consists of** a hydrogen-free fluorocarbon gas, an oxygen-containing gas and optional carrier gas" in claim 25 are new matters because applicant has not pointed out where the supports are in the specification.

3. Applicant has argued that the main etch of Hung is not selective to the underlying nitride. As stated in the office action, Hung teaches that the substrate includes a dielectric layer (e.g., oxide layer) over a nitride stop layer (col. 2, lines 24-31; Figs 1 and 2), e.g., SAC structure. An etchant gas may be supplied to the plasma etch chamber. Etching openings may be performed in the dielectric layer (Fig. 1) by energizing the etchant gas into a plasma state. The etchant gas may comprise a hydrogen-free fluorocarbon gas represented by C_xF_y gas wherein $y/x < 1.5$ (such as C_4F_6) and carrier gas (such as Ar). See col. 7, TABLE 1, first etch recipe and col. 7, lines 33-56. The main etch (using C_4F_6) with no CH_2F_2 may be used to etch **the entire oxide layer** (col.10,

lines 21-24). Furthermore, since same etchant is used in the same structure, the selectivity to the underlying nitride **is inherent**.

4. Applicant has argued that Hung teaches away from using an oxygen-containing gas in etching a dielectric layer with selectivity to an underlying nitride. As stated in the office action, this is incorrect. Hung teaches etching oxide layer (e.g., dielectric), with nitride as a stop layer, using hydrogen-free fluorocarbon (e.g., C_4F_6). After oxide etching, nitride layer may be etched using CH_2F_2, Ar, and oxygen, and oxygen destroys any nitride selectivity because at this time Hung is etching nitride with different chemistry (e.g., CH_2F_2, a hydrogen-containing fluorocarbon), it is irrelevant to previous etching of oxide overlying nitride stop layer using hydrogen-free fluorocarbon (e.g., C_4F_6). **Applicant has not commented on or acknowledged same.** Furthermore, as stated in the office action, Wang teaches that the addition of carbon monoxide, nitrogen, or oxygen, all of which are known to enhance selectivity and increase the etch stop margin (col. 10, lines 23-26). Hence, it would have been obvious to one with ordinary skill in the art to modify the etchant gas of Hung by adding oxygen as taught by Wang because Wang teaches that to do so will enhance selectivity and increase the etch stop margin.

In light of the comments above, the rejections are maintained.

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